



To: Mr. Stephen Pantalone  
Senior Planner  
City of Newton  
1000 Commonwealth Avenue  
Newton, MA 02459

Date: May 12, 2015

Memorandum

Project #: 12978.00

From: Matt Kealey, PE, PTOE  
Kathleen Keen, EIT

Re: Proposed Mixed Use Development  
283 Melrose Street  
Response to HSH Comments

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VHB has prepared this memorandum to respond to comments and questions raised in the March 27, 2015 Howard Stein-Hudson Associates, Inc. (HSH) traffic peer review memorandum for the proposed mixed-use development at 283 Melrose Street in Newton, Massachusetts. It should be noted that based on recent discussions between the Proponent and the City of Newton, the restaurant component of the project has been removed and six residential units have been added (for a total of 29 residential units), which results in a significant reduction in project trip generation. The following provides a list of the comments or questions raised by HSH followed by our response. Comments that do not require a response are not included below.

**Comment 1:** *The Applicant identified five study area intersections (three signalized, two unsignalized) for study as part of the TIAS. Study area intersections are typically those that will receive a significant portion of Project traffic. Study area roadways are typically targeted to assess a Project's impact for both operations and safety. The Applicant identified the three intersections that immediately abut the Project site and two intersections on Lexington Street to be included in the study area. The Applicant did not include the intersection of Commonwealth Avenue/Lexington Street, which will accommodate as many Project trips as the adjacent intersection of Commonwealth Avenue/Melrose Street and is included in the study area. The Applicant also did not include the intersection of Auburn Street/Woodland Road, which will serve 24 percent of the entering residential trips, 15 percent of the exiting residential trips, 44 percent of the entering commercial trips, and 32 percent of the exiting commercial trips. The Applicant should include the intersections of Commonwealth Avenue/Lexington Street and Auburn Street/Woodland Road in the study area.*

**Response 1:** Prior to commencing the traffic study, VHB and the Proponent had conversations with the City of Newton Director of Transportation regarding the study area intersections. Given the level of study that has been conducted recently at the intersection of Commonwealth Avenue and Lexington Street as part of other projects, this intersection was not required as a study area intersection. Regarding the intersection of Auburn Street and Woodland Street, the current trip generation would result in a total of 5 project trips (3 entering/2 exiting) during the weekday morning peak hour, 11 project trips (6 entering/5 exiting) during the weekday evening peak hour, and 44 project trips (28 entering/16 exiting) during the Saturday midday peak hour at this intersection. As such, during the highest peak hour, (Saturday midday), the project would result in less than one through vehicle per minute at this intersection, which would not have a significant impact. The City of Newton did not request that any additional intersections be included in the project study area.

**Comment 4:** *The Applicant collected automatic traffic recorder (ATR) counts and turning movement counts (TMC's) in December 2014 and were increased by a historic growth rate of 0.5% per year to reflect a 2015 base year. Counts were*

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conducted during the weekday a.m., weekday p.m., and Saturday midday peak periods. The ATR counts were conducted on Melrose Street north of Auburn Street and on Ash Street north of Auburn Street over a 72-hour period from December 18 to December 20, 2014. Melrose Street currently carries approximately 1,700 vehicles on an average weekday with 140 vehicles during the a.m. peak hour, 230 vehicles during the p.m. peak hour, and 185 vehicles during the Saturday midday peak hour. The TMCs were conducted at the study area intersections during the a.m. peak period (7:00-9:00 a.m.), p.m. peak period (4:00-6:00 p.m.), and the Saturday midday peak period (12:00-2:00 p.m.). These data collection time periods represent peak weekday traffic conditions and are typical of data collection time periods for traffic studies conducted for mixed-use developments. It is unclear what the peak hour of the theater will be. The Applicant should identify the peak hour of the proposed theater. HSH agrees with the data collection methodology and time periods used by the Applicant.

**Response 4:** Based on information provided by the Proponent, the theater hours of operation would be between 7:00 PM and 11:00 PM Monday through Friday, with some events extending to 12:00 AM. On weekends, the anticipated hours of operation are 2:00 PM to 6:00 PM and 7:00 PM to 11:00 PM-12:00 AM. Based on this schedule, the peak hours of the theater fall well outside the peak hours of the adjacent streets. As such, the peak hour analyses provided in the TIAS should be considered conservative.

**Comment 5:** The Applicant determined that it was not necessary to apply seasonal adjustment factors to the data collected in December 2014, as December volumes are generally higher than the average month based on seasonal factors provided by MassDOT. The Applicant should review data from nearby continuous count stations to verify that the December volumes are generally higher than the average month volumes in this area. In the event that this data does not exist, the MassDOT seasonal factors are sufficient to use.

**Response 5:** VHB reviewed available data from nearby continuous count stations and determined that there is not adequate information to justify a different seasonal adjustment factor for December traffic volumes than what is published by MassDOT.

**Comment 6:** The Applicant assessed the crash data from the most recent five year period for which data is available (2008-2012) to identify particular areas where traffic safety may be an issue. Two intersections had crash rates that were higher than the MassDOT District 6 average crash rate. The unsignalized intersection of Auburn Street at Melrose Street/Ash Street has a crash rate of 0.72 crashes per million entering vehicles, and the unsignalized intersection of Auburn Street at Lexington Street has a crash rate of 0.65 crashes per million entering vehicles. The MassDOT District 6 average crash rate for unsignalized intersections is 0.58 crashes per million entering vehicles. Most crashes were property-damage only crashes, and no fatalities were reported at the five intersections over the five-year period studied. The Applicant notes that several crashes can be attributed to vehicles backing out of parking spaces on the north side of Auburn Street, which are not located within the intersections themselves. The Applicant should obtain crash records from the City of Newton to determine if there are any measures that can be taken to reduce the occurrence of crashes at the two intersections with above-average crash rates.

**Response 6:** VHB obtained the crash reports from the City of Newton for the intersections of Auburn Street at Melrose Street/Ash Street and Auburn Street at Lexington Street. A review of the crash reports at these two intersections

determined that there were no clear patterns between the incidents that could be attributed to intersection geometry. It should also be noted that while the MassDOT crash data yielded 9 crashes at the intersection of Auburn Street at Melrose Street/Ash Street and 14 crashes at the intersection of Auburn Street at Lexington Street during the five year period, the City of Newton data only yielded 2 crashes and 4 crashes at these intersections, respectively. The crash reports from the City of Newton are included in the Attachments to this memorandum.

**Comment 13:** *The TIAS identifies one planned roadway improvement within the study area. According to the TIAS, the Commonwealth Avenue Reconstruction Project (MassDOT Project #600932) is scheduled to begin construction in the winter of 2018/2019, before the 2022 horizon year; however, the MassDOT project page states that construction will not begin until the summer of 2021. The TIAS does not explicitly state whether this project will impact the lane use of any study area intersections; however, the MassDOT project description implies that the reconstruction project will include the study area intersections of Commonwealth Avenue/Ash Street and Commonwealth Avenue/Melrose Street. If such information is available, the Applicant should state changes in lane use that will result as part of this project.*

*The City of Newton is currently exploring traffic signalization improvements throughout Auburndale Square, primarily focused on the intersection of Commonwealth Avenue/Lexington Street. The Applicant should include these improvements in the future conditions analysis.*

**Response 13:** At the time the study was published, the MassDOT project page had not been updated to reflect the summer of 2021 timeline for the Commonwealth Avenue Reconstruction Project. No information or plans for the MassDOT Commonwealth Avenue Reconstruction Project or the City of Newton Auburndale Square traffic signal improvement project are currently available and therefore could not be incorporated into the study.

**Comment 15:** *The TIAS estimates the trips generated by the Project based on the Institute of Transportation Engineers (ITE)'s Trip Generation, 9th Edition, using Land Use Code (LUC) 220 – Apartment, LUC 444 – Movie Theater with Matinee, LUC 710 – General Office Building, and LUC 932 – High-turnover Restaurant. The Applicant notes that there is no existing LUC for the type of theater proposed by the Project, and that LUC 444 should be an accurate, if not conservative, estimate of trips generated by the theater use during the p.m. peak hour and a very conservative estimate of trips generated by the theater use during the Saturday midday peak hour. Based on the TIAS, it is unclear how the theater will be used. The Applicant should provide more information about the operations of the theater including event types and anticipated hours of operation.*

*The Applicant estimates that 45 trips (21 entering, 24 exiting) will be generated by the Project in the a.m. peak period, 59 trips (30 entering, 29 exiting) will be generated in the p.m. peak period, and 472 trips (total entering + exiting) will be generated over the course of a typical weekday; the weekday total does not include theater trips due to a lack of available trip generation data. The Applicant estimates that 150 trips (82 entering, 68 exiting) will occur during the Saturday midday peak hour, and 526 trips (total entering and exiting) will be generated over a typical Saturday, not including the theater use. The Applicant should provide projections to estimate the daily trip generation characteristics on a typical Saturday. As previously stated, these trip generation estimates do not account for potential transit usage and represent a worst-case scenario.*

**Response 15:** To provide a Saturday daily trip generation projection, VHB reviewed information provided for ITE Land Use Code (LUC) LUC 444. It is important to note that the ITE LUC 444 data is only based on one observation for a theater with 1,236 seats, which is much larger than the proposed 255 seat theater. ITE suggests using the data with caution in such cases. Therefore, the Saturday daily trip generation projection is likely overstated. Additionally, as mentioned previously, the Proponent has eliminated the restaurant portion of the development and replaced that space with six additional residential units (for a total of 29 residential units) since the filing of the January 2015 TIAS. Table 1 summarizes the projected trip generation with the Saturday daily projections for the theater and with the updated building program.

**Table 1 Project Trip Generation Summary**

Time Period	Proposed Residential Trips <sup>a</sup>	Proposed Theater Trips <sup>b</sup>	Proposed Office Trips <sup>c</sup>	Total Proposed Trips	Original Total Proposed Trips	Total Trip Reduction
Weekday Daily	193	n/a	29	222	472	-250
Weekday Morning Peak Hour						
Enter	3	n/a	4	7	21	-14
Exit	<u>12</u>	<u>n/a</u>	<u>0</u>	<u>12</u>	<u>24</u>	<u>-12</u>
Total	15	n/a	4	19	45	-26
Weekday Evening Peak Hour						
Enter	12	6	1	19	30	-11
Exit	<u>6</u>	<u>10</u>	<u>3</u>	<u>19</u>	<u>29</u>	<u>-10</u>
Total	18	16	4	38	59	-21
Saturday Daily	185	504	6	695	1,030	-335
Saturday Midday						
Enter	8	58	1	67	82	-15
Exit	<u>7</u>	<u>46</u>	<u>1</u>	<u>54</u>	<u>68</u>	<u>-14</u>
Total	15	104	2	121	150	-29

a Trip Generation estimate based ITE LUC 220 (Apartment) for 29 units.

b Trip Generation estimate based ITE LUC 444 (Movie Theater with Matinee) for 225 seats.

c Trip Generation estimate based ITE LUC 710 (General Office Building) for 2,600 sf of space.

As shown in Table 1, the elimination of the restaurant component of the site results in a substantial reduction in project trip generation, thereby reducing potential project impacts.

**Comment 16:** The Applicant used Journey-to-Work data from the 2010 U.S. Census for the City of Newton to develop the trip distribution patterns for the residential uses on the site. The Applicant used existing traffic patterns throughout Auburndale to develop the trip distribution patterns for the commercial uses on the site. HSH agrees with this methodology. The Applicant should provide additional information that compares these trip distribution patterns with those used for the 70 Rowe Street traffic study that was recently submitted for consistency.

**Response 16:** The trip distribution patterns for the residential uses on the site were the same patterns used for the 70 Rowe Street residential traffic study. These arrival/departure patterns were adapted based on the proposed driveway configuration, the proposed access/circulation for the site, and the neighborhood circulation patterns.

**Comment 17:** The Applicant provided detailed stopping sight distance (SSD) and intersection sight distance (ISD) for the Project site driveways. Required and desired sight distances are based on the 85th percentile speeds of the traffic along each roadway. The SSD at the driveways is sufficient, the ISD north of the site driveway on Melrose Street is sufficient, but the desirable ISD south of the site driveway on Melrose Street and the ISD south of the site egress driveway on Ash Street are not met. The Applicant should provide the reasons for the lack of desirable ISD south of each driveway. The TIAs indicates that the ISD cannot be met due to the proximity of the adjacent intersection. It is unclear if adequate sight distance extends through the adjacent intersection. If the impediments to ISD along the horizontal geometry of Melrose Street and Ash Street are able to be removed or altered (e.g. a sign, parked car, or overgrown vegetation), HSH suggests that this measure be taken to assure adequate ISD south of the driveways.

**Response 17:** The lack of desirable ISD south of the site egress driveways on both Melrose Street and Ash Street is due to the close proximity of the intersection of Auburn Street at Melrose Street/Ash Street. Both Melrose Street and Ash Street end at their intersection with Auburn Street. Sight distance from the site egress driveways on Melrose Street and Ash Street extends to Auburn Street, which essentially forms a T-intersection. There are no impediments to ISD along the horizontal geometry of Melrose and Ash Street that would need to be removed. Given that vehicles approaching from Auburn Street would be traveling at turning speeds rather than the observed 85<sup>th</sup> percentile speeds, the desirable ISD is likely lower than reported in Table 4 of the TIAs.

**Comment 18:**

HSH reviewed the existing traffic operations analysis. The Applicant used the Synchro traffic engineering software to analyze all the intersections in the network. It is unclear whether the Applicant used existing queue observations to calibrate the Synchro models. The Applicant should clarify how the existing conditions Synchro models were calibrated.

All study area intersections operate at the same LOS in the Build conditions as they do in the No-Build conditions, except for the intersection of Commonwealth Avenue at Ash Street during the Saturday Midday peak hour, which worsens from LOS A to LOS B. Several individual movements at the signalized intersections operate with delays that are up to nine seconds higher in the Build conditions than in the No-Build conditions. Several individual movements at unsignalized intersections operate at slightly lower LOS during the Build condition than in the No-Build condition, but this is universally due to an increase of delay of no more than nine seconds. The analysis also indicates and verifies that existing queues along Commonwealth Avenue often spill back into adjacent intersections. As previously stated, the

*intersections of Commonwealth Avenue/Lexington Street and Auburn Street/Woodland Road should be added to the study area and analyzed for the Existing, No-Build, and Build conditions scenarios.*

**Response 18:** The existing conditions Synchro model results were verified by field visits at the study area intersections. The field observations showed similar results to those summarized in the TIAS. As discussed in Response 1, VHB received direction from the City of Newton for the study area intersections and the City did not require that any other intersections be analyzed as part of the TIAS.

**Comment 20:** *Several individual movements at both signalized and unsignalized intersections experience improvements in delay between the No-Build and Build conditions. For example, in the weekday p.m. peak hour, the Melrose Street southbound approach to Commonwealth Avenue is expected to have an average delay of 35 seconds, or 10 seconds less than the No-Build conditions. Similarly, the Auburn Street eastbound approach to Lexington Street is expected to have an average delay of 51 seconds in the Build condition, compared to 68 seconds in the No-Build condition. Based on a review of the information in the technical appendix that was provided with the TIAS, there are inconsistencies with the peak hour factors, heavy vehicle percentages, and traffic signal timing information between the No Build and Build conditions scenarios for the weekday evening and Saturday midday peak hours. The Applicant should explain the discrepancies between the No-Build and Build conditions. Although there are some inconsistencies between the No-Build and Build conditions, they do not have a material impact upon the analysis and therefore no additional analysis is required at this time.*

**Response 20:** VHB corrected the inconsistencies with the peak hour factors, heavy vehicle percentages, and traffic signal timing information between the No-Build and Build conditions scenarios for the weekday evening and Saturday midday peak hours. The revised analysis does not show any significant differences from the results reported in the TIAS. A summary of the results is included in the Attachments to this memorandum.

**Comment 21:** *Queue lengths are measured in feet at signalized intersections and in number of vehicles at unsignalized intersections (one vehicle typically accounts for 25 feet of queue length). 50th percentile queue lengths represent the average queue one may expect to observe during a peak hour. 95th percentile queues represent a queue that is longer than all but 5% of queues that occur along an approach during a given peak hour. This queue length would typically occur just once during a peak hour. The Commonwealth Avenue eastbound and westbound approach at Ash Street shows increases in 95th percentile delay of at least 272 feet and at least 334 feet, respectively, between the No-Build and Build conditions in the Saturday Midday peak hour. According to the TIAS, just 15 hourly vehicles are added to this intersection during the Saturday midday peak hour, and they are added to the Ash Street northbound approach to the signalized intersection. The Applicant should provide explanations to these increases in queue lengths, and provide observed queue lengths at this location.*

**Response 21:** The increases in queue length were due to the inconsistencies between the No-Build and Build conditions mentioned above in Comment 20. Under the revised analysis, the eastbound and westbound queues at the intersection of Commonwealth Avenue and Ash Street only show minor increases between the No-Build and Build conditions. A summary of the revised results is included in the Attachments to this memorandum.

**Comment 22:** *The Applicant states that the Project is expected to have very minor impacts on the traffic conditions in the study area and did not propose any geometric or signal timing changes to study area roadways and intersections. HSH agrees that the Project will have a very minor impact; however, as stated in Comment #6 above, HSH recommends that the Applicant further study the intersection of Auburn Street/Melrose Street/Ash Street, just south of the Project site, to improve traffic safety, ISD, and pedestrian flow between the Project site and Auburn Street. If there are any potential improvements to this intersection, the Applicant should work with the City of Newton to implement safety measures at this location.*

**Response 22:** As discussed in Response 6, VHB obtained the crash reports from the City of Newton for the intersection of Auburn Street Melrose Street/Ash Street. A review of the crash reports at these two intersections determined that there were no clear patterns between the incidents that could be attributed to intersection geometry. Given the limited number of police reports that were filed, VHB was not able to identify any obvious potential improvements that would address the crashes at these locations. However, the Proponent is willing to work with the City to address any concerns they may have.

*Comments 25-29 will be addressed by the Proponent and the site designers under a separate heading.*

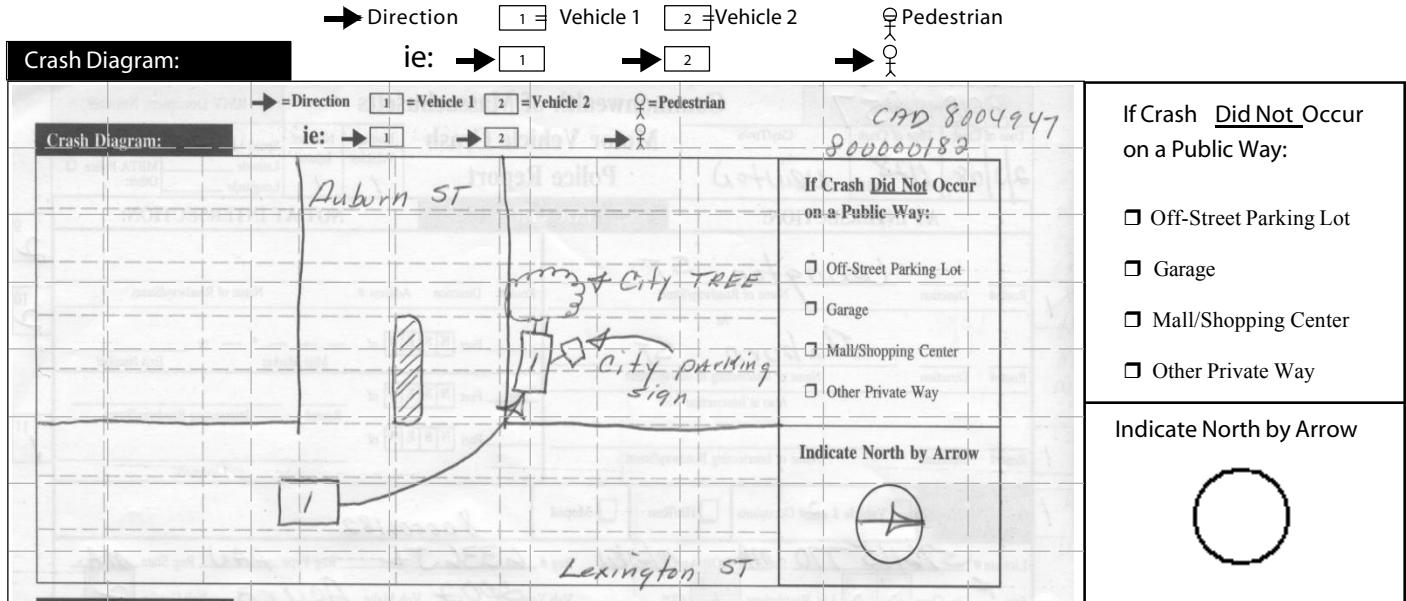
VHB is available to discuss the responses summarized in this memorandum. Should you have any questions or require additional information, please contact us.

## **Attachments**

- Vehicular Crash Data
- Trip Generation
- Intersection Capacity Analyses

## Vehicular Crash Data





## Crash Narrative:

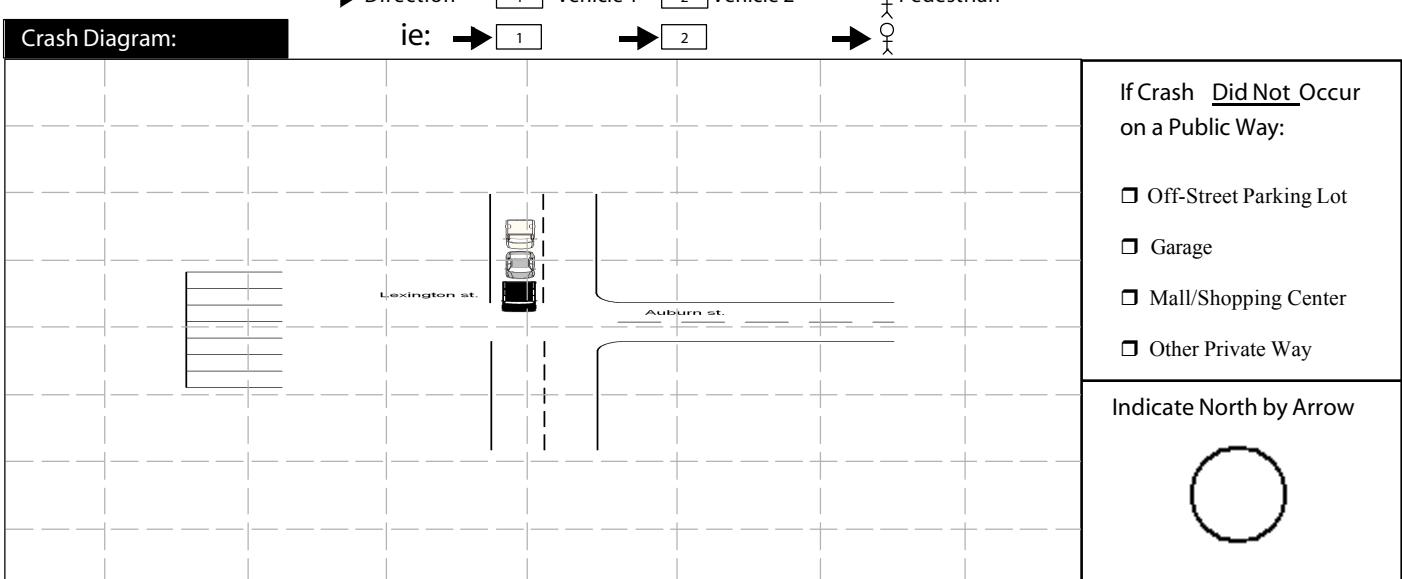
Witnesses:			
Name (Last, First, Middle)	Address	Phone #	Statement

Property Damage:				
Owner (Last, First, Middle)	Address	Phone #	34-Type	Description of Damaged Property

<b>Truck and Bus Information:</b>	Registration # _____	(From Vehicle Section)				
Carrier Name _____	Carrier Issuing Authority Code					
Address _____	City _____	St _____	Zip _____			
US DOT #: _____	State Number _____	Issuing State _____	ICC #: _____	Interstate		
Cargo Body Type Code	<span style="border: 1px solid black; padding: 2px;">37</span>	Gross Vehicle Weight	<span style="border: 1px solid black; padding: 2px;">38</span>			
Trailer Reg #:	Reg Type	Reg State	Reg Year	Trailer Length		
<b>Hazmat Information:</b>						
Placard	<span style="border: 1px solid black; padding: 2px;">40</span>	Material 1 digit #	<span style="border: 1px solid black; padding: 2px;">41</span>	Material Name _____	Material 4 digit # _____	Release code



Police Use Only		<b>Commonwealth of Massachusetts</b> <b>Motor Vehicle Crash</b> <b>Police Report</b>										RMV Document Number State Police _____ Local Police _____ MBTA Police _____ Other: _____		
Date of Crash	Time of Crash 24HR	City/Town				Number Vehicles	Number Injured	Speed Limit _____	Latitude _____	Longitude _____				
<b>AT INTERSECTION:</b>				<	<b>LOCATION</b>		>	<b>NOT AT INTERSECTION:</b>						
Route# Direction _____ Name of Roadway/Street _____ At _____				Route# Direction _____ Address # _____ Name of Roadway/Street _____										
Route# Direction _____ Name of Intersecting Roadway/Street _____ Also at Intersection with _____				Feet [N S E W] of _____ Mile Marker _____ or _____ Exit Number _____										
Route# Direction _____ Name of Intersecting Roadway/Street _____				Feet [N S E W] of _____ Route# _____ Intersecting Roadway/Street _____				Feet [N S E W] of _____ Landmark _____						
<input type="checkbox"/> <b>Vehicle</b> #Occupants _____		<input type="checkbox"/> <b>Hit/Run</b>		<input type="checkbox"/> <b>Moped</b>										
License # _____ St _____ DOB/Age _____ Sex _____ Lic. Class <b>18 18</b> Lic. Restrictions <b>19</b> CDL _____ Endorsment _____				Reg # _____ Reg Type _____ Reg State _____ Veh Year _____ Veh Make _____ Veh Config. <b>20</b>										
Operator _____ Last _____ First _____ Middle _____ Address _____				Owner _____ Last _____ First _____ Middle _____ Address _____										
City _____ State _____ Zip _____ Insurance Company _____				City _____ State _____ Zip _____ Vehicle Action Prior to Crash <b>21</b> Damaged Area Code: (Circle Up to Three)										
Vehicle Travel Direction: <b>[N S E W]</b> Responding to Emergency? _____				Event Sequence <b>22 22 22 22</b> Most Harmful Event <b>23</b> Driver Contributing Code <b>24 24</b> Underride/Override <b>25</b> Towed _____					2 3 4 1 ← 9 5 10 Undercarriage 8 7 6 11 Totaled					
Citation # (If Issued) _____ Violation 1: Ch _____ Sec _____ Violation 2: Ch _____ Sec _____ Violation 3: Ch _____ Sec _____ Violation 4: Ch _____ Sec _____														
Please fill out for operator and all occupants involved Name (Last First Middle) _____ Address _____				Age/DOB _____ Sex _____ 26 Seat Pos. _____ 27 Safety System _____ 28 Airbag Status _____ 29 Airbag Switch _____ 30 Eject Code _____ 31 Trap Code _____ 32 Injury Status _____ 33 Transp. Code _____ Medical Facility _____										
Operator _____ See Above														
Please Select One of the Following: <input type="checkbox"/> <b>Vehicle</b> #Occupants _____ <input type="checkbox"/> <b>Non-Motorist A</b> Type <b>14</b> Action <b>15</b> Location <b>16</b> Condition <b>17</b>				<input type="checkbox"/> <b>Hit/Run</b> <input type="checkbox"/> <b>Moped</b>										
License # _____ St _____ DOB/Age _____ Sex _____ Lic. Class <b>18 18</b> Lic. Restrictions <b>19</b> CDL _____ Endorsment _____				Reg # _____ Reg Type _____ Reg State _____ Veh Year _____ Veh Make _____ Veh Config. <b>20</b>										
Operator _____ Last _____ First _____ Middle _____ Address _____				Owner _____ Last _____ First _____ Middle _____ Address _____										
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Operator/Non-Motorist _____ See Above														



## Crash Narrative:

Witnesses:	Name (Last, First, Middle)	Address	Phone #	Statement

Property Damage:				
Owner (Last, First, Middle)	Address	Phone #	34-Type	Description of Damaged Property

Truck and Bus Information:	Registration # _____ (From Vehicle Section)					
Carrier Name _____	Carrier Issuing Authority Code _____					
Address _____	City _____	St _____	Zip _____			
US DOT #: _____	State Number _____	Issuing State _____	ICC #: _____	Interstate _____		
Cargo Body Type Code	<span style="border: 1px solid black; padding: 2px;">37</span>	Gross Vehicle Weight	<span style="border: 1px solid black; padding: 2px;">38</span>			
Trailer Reg #:	Reg Type _____	Reg State _____	Reg Year _____	Trailer Length		
Hazmat Information:						
Placard	<span style="border: 1px solid black; padding: 2px;">40</span>	Material 1 digit #	<span style="border: 1px solid black; padding: 2px;">41</span>	Material Name _____	Material 4 digit # _____	Release code





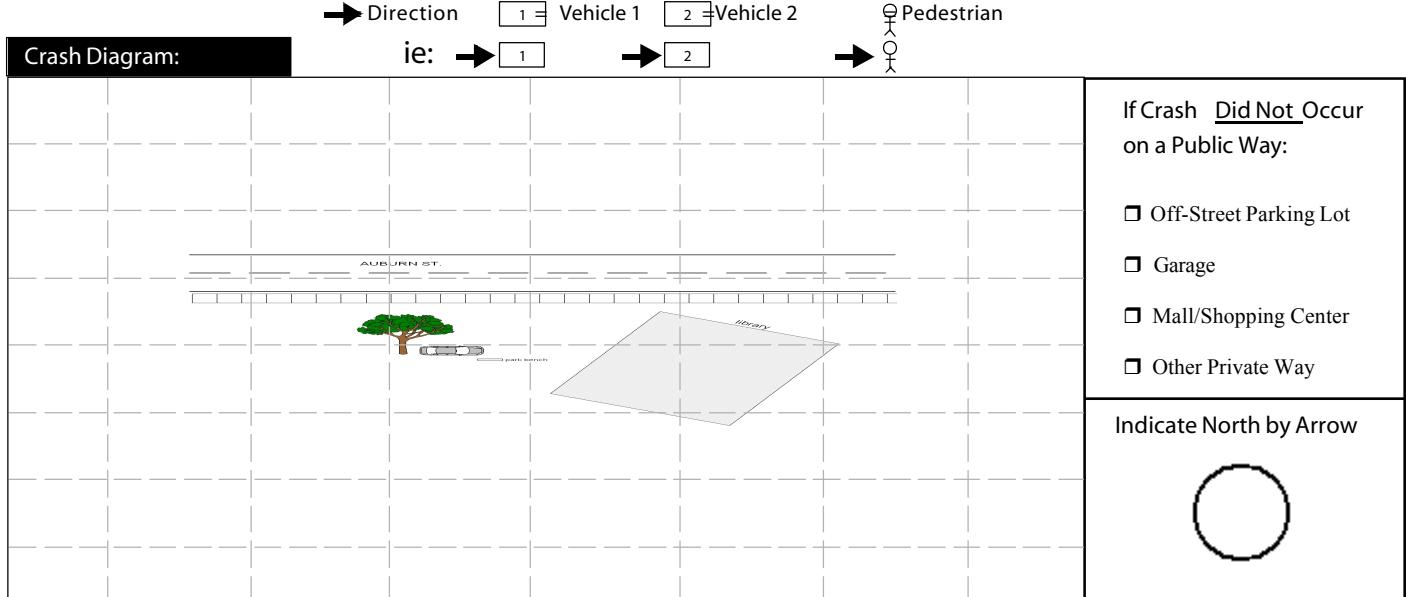


Police Use Only		<b>Commonwealth of Massachusetts</b> <b>Motor Vehicle Crash</b> <b>Police Report</b>										RMV Document Number State Police _____ Local Police _____ MBTA Police _____ Other: _____			
Date of Crash	Time of Crash 24HR	City/Town				Number Vehicles	Number Injured	Speed Limit _____	Latitude _____	Longitude _____					
<b>AT INTERSECTION:</b>				<	<b>LOCATION</b>		>	<b>NOT AT INTERSECTION:</b>							
Route# Direction _____ Name of Roadway/Street _____ At _____				Route# Direction _____ Address # _____ Name of Roadway/Street _____											
Route# Direction _____ Name of Intersecting Roadway/Street _____ Also at Intersection with _____				Feet [N S E W] of _____ Mile Marker _____ or _____ Exit Number _____											
Route# Direction _____ Name of Intersecting Roadway/Street _____				Feet [N S E W] of _____ Route# _____ Intersecting Roadway/Street _____				Feet [N S E W] of _____ Landmark _____							
<input type="checkbox"/> <b>Vehicle</b> #Occupants _____		<input type="checkbox"/> <b>Hit/Run</b>		<input type="checkbox"/> <b>Moped</b>											
License # _____ St _____ DOB/Age _____ Sex _____ Lic. Class <b>18 18</b> Lic. Restrictions <b>19</b> CDL _____ Endorsement				Reg # _____ Reg Type _____ Reg State _____ Veh Year _____ Veh Make _____ Veh Config. <b>20</b>											
Operator _____ Last _____ First _____ Middle _____ Address _____				Owner _____ Last _____ First _____ Middle _____ Address _____											
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Please Select One of the Following: <input type="checkbox"/> <b>Vehicle</b> #Occupants _____				<input type="checkbox"/> <b>Non-Motorist A</b> Type <b>14</b>		<input type="checkbox"/> <b>Action</b> <b>15</b>		<input type="checkbox"/> <b>Location</b> <b>16</b>		<input type="checkbox"/> <b>Condition</b> <b>17</b>		<input type="checkbox"/> <b>Hit/Run</b>		<input type="checkbox"/> <b>Moped</b>	
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Operator/Non-Motorist _____ See Above															





Police Use Only		<b>Commonwealth of Massachusetts</b> <b>Motor Vehicle Crash</b> <b>Police Report</b>										RMV Document Number State Police _____ Local Police _____ MBTA Police _____ Other: _____		
Date of Crash	Time of Crash 24HR	City/Town				Number Vehicles	Number Injured	Speed Limit _____	Latitude _____	Longitude _____				
<b>AT INTERSECTION:</b>				<	<b>LOCATION</b>		>	<b>NOT AT INTERSECTION:</b>						
Route# Direction _____ Name of Roadway/Street _____ At _____				Route# Direction _____ Address # _____ Name of Roadway/Street _____										
Route# Direction _____ Name of Intersecting Roadway/Street _____ Also at Intersection with _____				Feet [N S E W] of _____ Mile Marker _____ or _____ Exit Number _____										
Route# Direction _____ Name of Intersecting Roadway/Street _____				Feet [N S E W] of _____ Route# _____ Intersecting Roadway/Street _____				Feet [N S E W] of _____ Landmark _____						
<input type="checkbox"/> <b>Vehicle</b> #Occupants _____		<input type="checkbox"/> <b>Hit/Run</b>		<input type="checkbox"/> <b>Moped</b>										
License # _____ St _____ DOB/Age _____ Sex _____ Lic. Class <b>18 18</b> Lic. Restrictions <b>19</b> CDL _____ Endorsment _____				Reg # _____ Reg Type _____ Reg State _____ Veh Year _____ Veh Make _____ Veh Config. <b>20</b>										
Operator _____ Last _____ First _____ Middle _____ Address _____				Owner _____ Last _____ First _____ Middle _____ Address _____										
City _____ State _____ Zip _____ Insurance Company _____				City _____ State _____ Zip _____ Vehicle Action Prior to Crash <b>21</b> Damaged Area Code: (Circle Up to Three)										
Vehicle Travel Direction: <b>[N S E W]</b> Responding to Emergency? _____				Event Sequence <b>22 22 22 22</b> Most Harmful Event <b>23</b> Driver Contributing Code <b>24 24</b> Underride/Override <b>25</b> Towed _____					2 3 4 1 ← 9 5 10 Undercarriage 8 7 6 11 Totaled					
Citation # (If Issued) _____ Violation 1: Ch _____ Sec _____ Violation 2: Ch _____ Sec _____ Violation 3: Ch _____ Sec _____ Violation 4: Ch _____ Sec _____														
Please fill out for operator and all occupants involved Name (Last First Middle) _____ Address _____				Age/DOB _____ Sex _____ 26 Seat Pos. _____ 27 Safety System _____ 28 Airbag Status _____ 29 Airbag Switch _____ 30 Eject Code _____ 31 Trap Code _____ 32 Injury Status _____ 33 Transp. Code _____ Medical Facility _____										
Operator _____ See Above														
Please Select One of the Following: <input type="checkbox"/> <b>Vehicle</b> #Occupants _____ <input type="checkbox"/> <b>Non-Motorist A</b> Type <b>14</b> Action <b>15</b> Location <b>16</b> Condition <b>17</b>				<input type="checkbox"/> <b>Hit/Run</b> <input type="checkbox"/> <b>Moped</b>										
License # _____ St _____ DOB/Age _____ Sex _____ Lic. Class <b>18 18</b> Lic. Restrictions <b>19</b> CDL _____ Endorsment _____				Reg # _____ Reg Type _____ Reg State _____ Veh Year _____ Veh Make _____ Veh Config. <b>20</b>										
Operator _____ Last _____ First _____ Middle _____ Address _____				Owner _____ Last _____ First _____ Middle _____ Address _____										
City _____ State _____ Zip _____ Insurance Company _____				City _____ State _____ Zip _____ Vehicle Action Prior to Crash <b>21</b> Damaged Area Code: (Circle Up to Three)										
Vehicle Travel Direction: <b>[N S E W]</b> Responding to Emergency? _____				Event Sequence <b>22 22 22 22</b> Most Harmful Event <b>23</b> Driver Contributing Code <b>24 24</b> Underride/Override <b>25</b> Towed _____					2 3 4 1 ← 9 5 10 Undercarriage 8 7 6 11 Totaled					
Citation # (If Issued) _____ Violation 1: Ch _____ Sec _____ Violation 2: Ch _____ Sec _____ Violation 3: Ch _____ Sec _____ Violation 4: Ch _____ Sec _____														
Please fill out for operator and all occupants involved Name (Last First Middle) _____ Address _____				Age/DOB _____ Sex _____ 26 Seat Pos. _____ 27 Safety System _____ 28 Airbag Status _____ 29 Airbag Switch _____ 30 Eject Code _____ 31 Trap Code _____ 32 Injury Status _____ 33 Transp. Code _____ Medical Facility _____										
Operator/Non-Motorist _____ See Above														



## Crash Narrative:

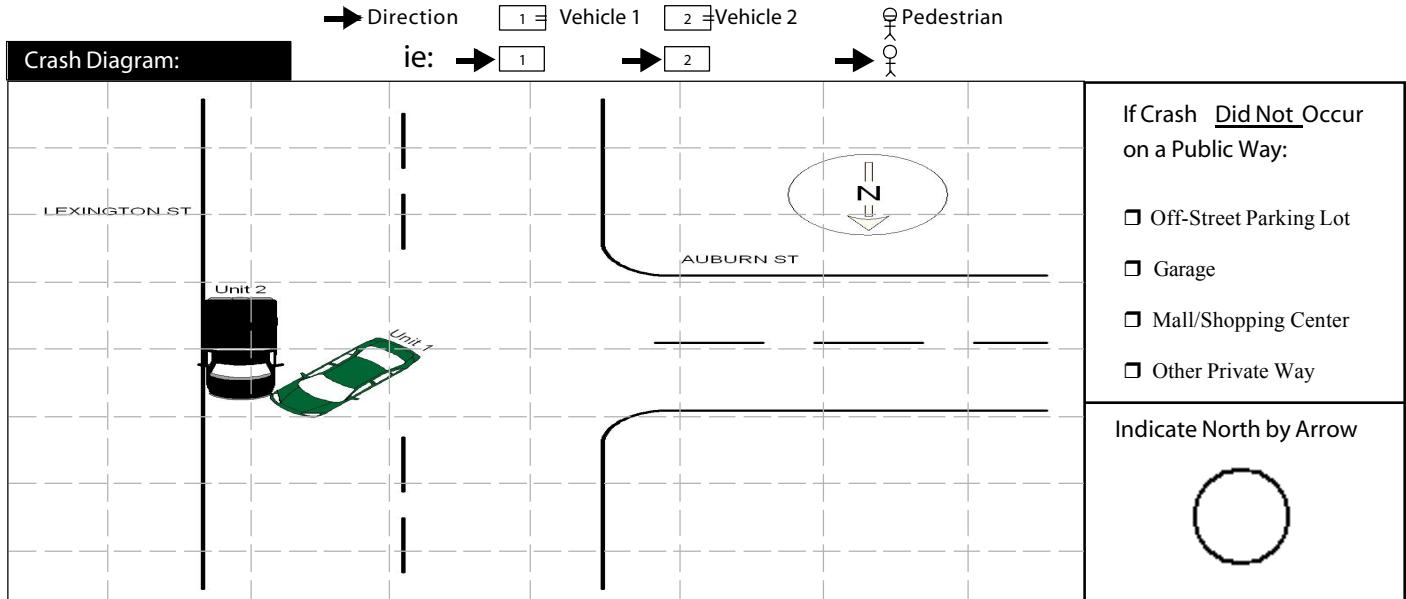
Witnesses:			
Name (Last, First, Middle)	Address	Phone #	Statement

Property Damage:				
Owner (Last, First, Middle)	Address	Phone #	34-Type	Description of Damaged Property

<b>Truck and Bus Information:</b>	Registration # _____	(From Vehicle Section)				
Carrier Name _____	Carrier Issuing Authority Code					
Address _____	City _____	St _____	Zip _____			
US DOT #: _____	State Number _____	Issuing State _____	ICC #: _____	Interstate		
Cargo Body Type Code	<span style="border: 1px solid black; padding: 2px;">37</span>	Gross Vehicle Weight	<span style="border: 1px solid black; padding: 2px;">38</span>			
Trailer Reg #:	Reg Type _____	Reg State _____	Reg Year _____	Trailer Length		
<b>Hazmat Information:</b>						
Placard	<span style="border: 1px solid black; padding: 2px;">40</span>	Material 1 digit #	<span style="border: 1px solid black; padding: 2px;">41</span>	Material Name _____	Material 4 digit # _____	Release code



Police Use Only		<b>Commonwealth of Massachusetts</b> <b>Motor Vehicle Crash</b> <b>Police Report</b>										RMV Document Number State Police _____ Local Police _____ MBTA Police _____ Other: _____		
Date of Crash	Time of Crash 24HR	City/Town				Number Vehicles	Number Injured	Speed Limit _____	Latitude _____	Longitude _____				
<b>AT INTERSECTION:</b>				<	<b>LOCATION</b>		>	<b>NOT AT INTERSECTION:</b>						
Route# Direction _____ Name of Roadway/Street _____ At _____				Route# Direction _____ Address # _____ Name of Roadway/Street _____										
Route# Direction _____ Name of Intersecting Roadway/Street _____ Also at Intersection with _____				Feet [N S E W] of _____ Mile Marker _____ or _____ Exit Number _____										
Route# Direction _____ Name of Intersecting Roadway/Street _____				Feet [N S E W] of _____ Route# _____ Intersecting Roadway/Street _____				Feet [N S E W] of _____ Landmark _____						
<input type="checkbox"/> <b>Vehicle</b> #Occupants _____		<input type="checkbox"/> <b>Hit/Run</b>		<input type="checkbox"/> <b>Moped</b>										
License # _____ St _____ DOB/Age _____ Sex _____ Lic. Class <b>18 18</b> Lic. Restrictions <b>19</b> CDL _____ Endorsment _____				Reg # _____ Reg Type _____ Reg State _____ Veh Year _____ Veh Make _____ Veh Config. <b>20</b>										
Operator _____ Last _____ First _____ Middle _____ Address _____				Owner _____ Last _____ First _____ Middle _____ Address _____										
City _____ State _____ Zip _____ Insurance Company _____				City _____ State _____ Zip _____ Vehicle Action Prior to Crash <b>21</b> Damaged Area Code: (Circle Up to Three)										
Vehicle Travel Direction: <b>[N S E W]</b> Responding to Emergency? _____				Event Sequence <b>22 22 22 22</b> Most Harmful Event <b>23</b> Driver Contributing Code <b>24 24</b> Underride/Override <b>25</b> Towed _____					2 3 4 1 ← 9 5 10 Undercarriage 8 7 6 11 Totaled					
Citation # (If Issued) _____ Violation 1: Ch _____ Sec _____ Violation 2: Ch _____ Sec _____ Violation 3: Ch _____ Sec _____ Violation 4: Ch _____ Sec _____														
Please fill out for operator and all occupants involved Name (Last First Middle) _____ Address _____				Age/DOB _____ Sex _____ 26 Seat Pos. _____ 27 Safety System _____ 28 Airbag Status _____ 29 Airbag Switch _____ 30 Eject Code _____ 31 Trap Code _____ 32 Injury Status _____ 33 Transp. Code _____ Medical Facility _____										
Operator _____ See Above														
Please Select One of the Following: <input type="checkbox"/> <b>Vehicle</b> #Occupants _____ <input type="checkbox"/> <b>Non-Motorist A</b> Type <b>14</b> Action <b>15</b> Location <b>16</b> Condition <b>17</b>				<input type="checkbox"/> <b>Hit/Run</b> <input type="checkbox"/> <b>Moped</b>										
License # _____ St _____ DOB/Age _____ Sex _____ Lic. Class <b>18 18</b> Lic. Restrictions <b>19</b> CDL _____ Endorsment _____				Reg # _____ Reg Type _____ Reg State _____ Veh Year _____ Veh Make _____ Veh Config. <b>20</b>										
Operator _____ Last _____ First _____ Middle _____ Address _____				Owner _____ Last _____ First _____ Middle _____ Address _____										
City _____ State _____ Zip _____ Insurance Company _____				City _____ State _____ Zip _____ Vehicle Action Prior to Crash <b>21</b> Damaged Area Code: (Circle Up to Three)										
Vehicle Travel Direction: <b>[N S E W]</b> Responding to Emergency? _____				Event Sequence <b>22 22 22 22</b> Most Harmful Event <b>23</b> Driver Contributing Code <b>24 24</b> Underride/Override <b>25</b> Towed _____					2 3 4 1 ← 9 5 10 Undercarriage 8 7 6 11 Totaled					
Citation # (If Issued) _____ Violation 1: Ch _____ Sec _____ Violation 2: Ch _____ Sec _____ Violation 3: Ch _____ Sec _____ Violation 4: Ch _____ Sec _____														
Please fill out for operator and all occupants involved Name (Last First Middle) _____ Address _____				Age/DOB _____ Sex _____ 26 Seat Pos. _____ 27 Safety System _____ 28 Airbag Status _____ 29 Airbag Switch _____ 30 Eject Code _____ 31 Trap Code _____ 32 Injury Status _____ 33 Transp. Code _____ Medical Facility _____										
Operator/Non-Motorist _____ See Above														



## Crash Narrative:

**Witnesses:**

Name (Last, First, Middle)	Address	Phone #	Statement

## Property Damage:

Owner (Last, First, Middle)	Address	Phone #	34-Type	Description of Damaged Property

## Truck and Bus Information:

Registration # (From Vehicle Section)

Carrier Name \_\_\_\_\_ Carrier Issuing Authority Code \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_ St \_\_\_\_\_ Zip \_\_\_\_\_

US DOT #: State Number Issuing State ICC #: Interstate 36

Cargo Body Type Code      37      Gross Vehicle Weight      38

Trailer Reg #:  Reg Type:  Reg State:  Reg Year:  Trailer Length:  39

Hazmat Information: \_\_\_\_\_

Placard **40** Material 1 digit # **41** Material Name \_\_\_\_\_ Material 4 digit # \_\_\_\_\_ Release code **42**

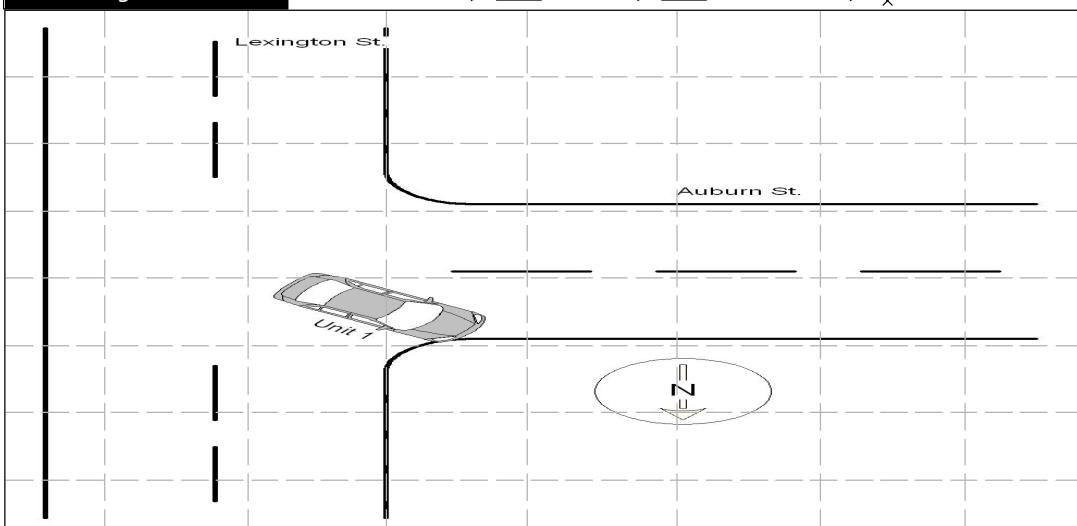


→ Direction    1 = Vehicle 1    2 = Vehicle 2     Pedestrian

## Crash Diagram:

ie:

ie:  1       2



If Crash Did Not Occur  
on a Public Way:

- Off-Street Parking Lot
  - Garage
  - Mall/Shopping Center
  - Other Private Way

**Indicate North by Arrow**



## Crash Narrative:

Witnesses:			
Name (Last, First, Middle)	Address	Phone #	Statement

## Property Damage:

Owner (Last, First, Middle)	Address	Phone #	34-Type	Description of Damaged Property

## Truck and Bus Information:

Registration # (From Vehicle Section)

**Carrier Name** \_\_\_\_\_ **Carrier Issuing Authority Code** \_\_\_\_\_

35

**Address** \_\_\_\_\_ **City** \_\_\_\_\_ **St** \_\_\_\_\_ **Zip** \_\_\_\_\_

US DOT #: State Number Issuing State ICC #: Interstate 36

5

Carry Body Type Code **37** Gross Vehicle Weight **38**

1

Trailer Reg #:                               Reg Type                               Reg State                               Reg Year                               Trailer Length                               39

Hazmat Information: [ ]

Placard 40 Material 1 digit # 41 Material Name \_\_\_\_\_ Material 4 digit # \_\_\_\_\_ Release code 42

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**Police Officer Name (Please Print)**

Signature

ID/Badge #

Department

### Precinct/Barracks

Date

## Trip Generation

**ITE TRIP GENERATION WORKSHEET**  
 (9th Edition, Updated 2012)

**LANDUSE:** Apartment  
**LANDUSE CODE:** 220  
 Independent Variable --- Dwelling Units

**JOB NAME:** Turtle Lane  
**JOB NUMBER:** 12978.00  
**Dwelling Units:** 29

**WEEKDAY**

RATES:	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	88	0.87	6.65	1.27	12.50	210	0	1,000	50%	50%
AM PEAK (ADJACENT ST)	78	0.83	0.51	0.10	1.02	235	0	1,100	20%	80%
PM PEAK (ADJACENT ST)	90	0.77	0.62	0.10	1.64	233	0	1,100	65%	35%

**TRIPS:**

<b>BY AVERAGE</b>			<b>BY REGRESSION</b>		
Total	Enter	Exit	Total	Enter	Exit
193	96	96	299	150	150
15	3	12	18	4	14
18	12	6	34	22	12

**SATURDAY**

RATES:	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	15	0.85	6.39	2.84	8.40	175	65	360	50%	50%
PEAK OF GENERATOR	14	0.56	0.52	0.26	1.05	178	65	360	Peak Distribution Not Available	

**TRIPS:**

<b>BY AVERAGE</b>			<b>BY REGRESSION</b>		
Total	Enter	Exit	Total	Enter	Exit
185	93	93	-29	-14	-14
15	N/A	N/A	31	N/A	N/A

**SUNDAY**

RATES:	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	14	0.82	5.86	3.21	7.53	182	90	360	50%	50%
PEAK OF GENERATOR	13	--	0.51	0.26	1.43	186	90	360	Peak Distribution Not Available	

**TRIPS:**

<b>BY AVERAGE</b>			<b>BY REGRESSION</b>		
Total	Enter	Exit	Total	Enter	Exit
170	93	93	85	43	43
15	N/A	N/A	N/A	N/A	N/A

## Intersection Capacity Analyses

**Table 5** Signalized Intersection Capacity Analysis

Location	Movement	2015 Existing Conditions					2022 No-Build Conditions					2022 Build Conditions				
		v/c <sup>a</sup>	Delay <sup>b</sup>	LOS <sup>c</sup>	50 Q <sup>d</sup>	95 Q <sup>e</sup>	v/c	Delay	LOS	50 Q	95 Q	v/c	Delay	LOS	50 Q	95 Q
<b>Commonwealth Avenue at Ash Street</b>																
Weekday	EB T	0.45	10	A	0	#477	0.46	10	B	0	#505	0.46	10	B	0	#506
Morning	WB T	0.73	15	B	0	#927	0.76	16	B	0	#976	0.76	16	B	0	#976
	NB L/R	0.03	0	A	0	0	0.03	0	A	0	0	0.04	0	A	0	0
	SB L/R	0.14	1	A	0	0	0.15	1	A	0	0	0.15	1	A	0	0
	<b>Overall</b>		<b>13</b>	<b>B</b>				<b>14</b>	<b>B</b>				<b>14</b>	<b>B</b>		
Weekday	EB T	0.55	10	A	98	571	0.58	11	B	107	#656	0.58	11	B	107	#656
Evening	WB T	0.63	12	B	127	#799	0.66	13	B	138	#850	0.66	13	B	138	#850
	NB L/R	0.10	1	A	0	0	0.10	1	A	0	0	0.13	1	A	0	0
	SB L/R	0.19	2	A	0	0	0.20	2	A	0	0	0.20	2	A	0	0
	<b>Overall</b>		<b>11</b>	<b>B</b>				<b>11</b>	<b>B</b>				<b>11</b>	<b>B</b>		
Saturday	EB T	0.46	6	A	74	214	0.47	6	A	78	226	0.50	7	A	79	237
Midday	WB T	0.53	7	A	96	313	0.55	7	A	101	334	0.59	8	A	103	351
	NB L/R	0.19	2	A	0	0	0.19	2	A	0	0	0.30	6	A	0	0
	SB L/R	0.08	1	A	0	0	0.08	1	A	0	0	0.08	1	A	0	0
	<b>Overall</b>		<b>6</b>	<b>A</b>				<b>6</b>	<b>A</b>				<b>7</b>	<b>A</b>		
<b>Commonwealth Avenue at Melrose Street</b>																
Weekday	EB L/T/R	0.57	10	A	113	447	0.63	11	B	121	478	0.63	11	B	121	478
Morning	WB L/T/R	0.79	16	B	224	#959	0.88	21	C	253	#1020	0.89	23	C	264	#1040
	NB L/T/R	0.48	23	C	17	71	0.53	26	C	23	82	0.54	26	C	23	84
	SB L/T/R	0.30	28	C	14	51	0.33	28	C	16	55	0.33	28	C	16	55
	<b>Overall</b>		<b>14</b>	<b>B</b>				<b>18</b>	<b>B</b>				<b>19</b>	<b>B</b>		
Weekday	EB L/T/R	0.66	12	B	149	#566	0.69	13	B	162	#673	0.69	13	B	162	#673
Evening	WB L/T/R	0.75	15	B	187	#758	0.77	16	B	203	#810	0.79	17	B	211	#831
	NB L/T/R	0.73	35	C	49	#168	0.78	39	D	54	#186	0.80	41	D	57	#196
	SB L/T/R	0.50	38	D	15	37	0.58	45	D	18	41	0.60	47	D	18	41
	<b>Overall</b>		<b>17</b>	<b>B</b>				<b>18</b>	<b>B</b>				<b>19</b>	<b>B</b>		
Saturday	EB L/T/R	0.58	10	B	97	401	0.60	11	B	103	428	0.59	10	B	105	437
Midday	WB L/T/R	0.68	13	B	129	#593	0.70	13	B	138	#672	0.76	16	B	162	#767
	NB L/T/R	0.51	21	C	16	75	0.54	22	C	19	81	0.59	21	C	19	85
	SB L/T/R	0.34	26	C	13	54	0.37	28	C	15	57	0.44	31	C	15	58
	<b>Overall</b>		<b>13</b>	<b>B</b>				<b>13</b>	<b>B</b>				<b>15</b>	<b>B</b>		

a. Volume to capacity ratio.

b. Average total delay, in seconds per vehicle.

c. Level-of-service.

d. 50<sup>th</sup> percentile queue, in feet.

e. 95<sup>th</sup> percentile queue, in feet.

~

Volume exceeds capacity, queue is theoretically infinite.

#

95<sup>th</sup> percentile volume exceeds capacity, queue may be longer.

**Table 5** Signalized Intersection Capacity Analysis (continued)

Location	Movement	2015 Existing Conditions					2022 No-Build Conditions					2022 Build Conditions				
		v/c <sup>a</sup>	Delay <sup>b</sup>	LOS <sup>c</sup>	50 Q <sup>d</sup>	95 Q <sup>e</sup>	v/c	Delay	LOS	50 Q	95 Q	v/c	Delay	LOS	50 Q	95 Q
<b>Auburn Street at Central Street/Grove Street</b>																
Weekday	EB L/T/R	0.35	22	C	42	104	0.38	22	C	45	108	0.38	22	C	45	108
Morning	WB L/T/R	0.53	18	B	48	149	0.68	26	C	71	#240	0.68	26	C	71	#240
	NB L/T/R	0.53	14	B	96	274	0.57	15	B	105	300	0.57	15	B	106	303
	SB L/T/R	0.61	17	B	97	#320	0.66	19	B	108	#362	0.69	20	C	113	#379
	<b>Overall</b>		<b>17</b>	<b>B</b>				<b>19</b>	<b>B</b>				<b>20</b>	<b>B</b>		
Weekday	EB L/T/R	0.29	20	C	38	102	0.30	20	C	40	104	0.30	20	C	40	105
Evening	WB L/T/R	0.47	20	B	49	126	0.58	24	C	65	158	0.59	24	C	66	#163
	NB L/T/R	0.51	14	B	87	253	0.56	15	B	99	287	0.57	15	B	101	291
	SB L/T/R	0.86	32	C	142	#462	0.94	43	D	161	#505	0.96	47	D	166	#514
	<b>Overall</b>		<b>22</b>	<b>C</b>				<b>28</b>	<b>C</b>				<b>29</b>	<b>C</b>		
Saturday	EB L/T/R	0.11	19	B	12	39	0.11	19	B	12	41	0.11	19	B	12	41
Midday	WB L/T/R	0.30	13	B	21	73	0.38	17	B	35	99	0.39	16	B	35	102
	NB L/T/R	0.30	11	B	49	137	0.33	12	B	53	150	0.34	12	B	56	155
	SB L/T/R	0.35	12	B	48	142	0.37	12	B	52	152	0.39	13	B	55	160
	<b>Overall</b>		<b>12</b>	<b>B</b>				<b>13</b>	<b>B</b>				<b>14</b>	<b>B</b>		

- a. Volume to capacity ratio.
- b. Average total delay, in seconds per vehicle.
- c. Level-of-service.
- d. 50<sup>th</sup> percentile queue, in feet.
- e. 95<sup>th</sup> percentile queue, in feet.

**Table 6**      **Unsignalized Intersection Capacity Analysis**

Location	Movement	2015 Existing Conditions					2022 No-Build Conditions					2022 Build Conditions				
		D <sup>a</sup>	v/c <sup>b</sup>	Delay <sup>c</sup>	LOS <sup>d</sup>	95 Q <sup>e</sup>	D	v/c	Delay	LOS	95 Q	D	v/c	Delay	LOS	95 Q
<b>Carriage Lane at Melrose Street</b>																
Weekday	WB L/T/R	11	0.02	9	A	1	11	0.02	9	A	1	11	0.02	9	A	1
Morning	NB L	7	0.01	7	A	0	7	0.01	7	A	0	7	0.01	7	A	0
Weekday	WB L/T/R	2	0.01	9	A	0	2	0.01	9	A	0	2	0.01	9	A	0
Evening	NB L	2	0.00	7	A	0	2	0.00	7	A	0	2	0.00	7	A	0
Saturday	WB L/T/R	11	0.02	9	A	1	11	0.02	9	A	1	11	0.02	9	A	1
Midday	NB L	5	0.00	7	A	0	5	0.00	7	A	0	5	0.00	7	A	0
<b>Auburn Street at Melrose Street/Ash Street</b>																
Weekday	EB L	49	0.05	8	A	1	54	0.05	8	A	1	62	0.06	8	A	1
Morning	SB L/R	46	0.12	12	B	1	49	0.14	12	B	1	73	0.21	13	B	1
Weekday	EB L	131	0.11	8	A	1	136	0.12	8	A	1	147	0.13	8	A	1
Evening	SB L/R	62	0.15	14	B	1	67	0.17	14	B	1	92	0.23	15	B	1
Saturday	EB L	17	0.02	8	A	1	19	0.02	8	A	1	53	0.05	8	A	1
Midday	SB L/R	64	0.14	11	B	1	68	0.15	11	B	1	134	0.29	13	B	2
<b>Auburn Street at Lexington Street</b>																
Weekday	EB L/T/R	172	0.87	74	F	8	178	1.00	111	F	9	187	1.04	120	F	10
Morning	WB L/T/R	2	0.05	49	E	1	2	0.05	56	F	1	2	0.06	59	F	1
	NB L	197	0.19	9	A	1	204	0.21	9	A	1	208	0.21	10	A	1
	SB L	4	0.00	8	A	0	4	0.00	8	A	0	4	0.00	8	A	0
Weekday	EB L/T/R	250	0.84	48	E	8	260	0.94	68	F	10	266	1.00	83	F	12
Evening	WB L/T/R	11	0.14	29	D	1	11	0.16	33	D	1	11	0.17	36	E	1
	NB L	102	0.10	9	A	1	105	0.11	9	A	1	114	0.12	9	A	1
	SB L	neg	-	0	A	0	neg	-	0	A	0	neg	-	0	A	0
Saturday	EB L/T/R	119	0.36	17	C	2	123	0.39	18	C	2	133	0.42	19	C	2
Midday	WB L/T/R	12	0.05	13	B	1	12	0.05	13	B	1	12	0.05	14	B	1
	NB L	79	0.07	8	A	1	82	0.07	8	A	1	95	0.09	8	A	1
	SB L	2	0.00	8	A	0	2	0.00	8	A	0	2	0.00	8	A	0

a. Demand of critical movement.

b. Volume to capacity ratio.

c. Average total delay, in seconds per vehicle.

d. Level-of-service.

e. 95<sup>th</sup> percentile queue, in vehicles.

**Table 6      Unsignalized Intersection Capacity Analysis (continued)**

Location	Movement	2015 Existing Conditions					2022 No-Build Conditions					2022 Build Conditions				
		D <sup>a</sup>	v/c <sup>b</sup>	Delay <sup>c</sup>	LOS <sup>d</sup>	95 Q <sup>e</sup>	D	v/c	Delay	LOS	95 Q	D	v/c	Delay	LOS	95 Q
<b>Melrose Street at Site Egress Driveway</b>																
Weekday	EB L/R											20	0.02	9	A	1
Morning																
Weekday	EB L/R		<i>Intersection does not exist</i>					<i>Intersection does not exist</i>				24	0.03	9	A	1
Evening																
Saturday	EB L/R											53	0.07	9	A	1
Midday																
<b>Ash Street at Site Egress Driveway</b>																
Weekday	WB R											4	0.00	8	A	0
Morning																
Weekday	WB R		<i>Intersection does not exist</i>					<i>Intersection does not exist</i>				5	0.01	8	A	0
Evening																
Saturday	WB R											15	0.02	8	A	0
Midday																

a. Demand of critical movement.

b. Volume to capacity ratio.

c. Average total delay, in seconds per vehicle.

d. Level-of-service.

e. 95<sup>th</sup> percentile queue, in vehicles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø3
Lane Configurations													
Volume (vph)	0	800	0	0	924	0	15	0	9	16	0	11	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Satd. Flow (prot)	0	1881	0	0	1863	0	0	1726	0	0	1742	0	
Flt Permitted								0.969			0.971		
Satd. Flow (perm)	0	1881	0	0	1863	0	0	1726	0	0	1726	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)								113			113		
Link Speed (mph)	30			30			30			30			
Link Distance (ft)	213			716			566			137			
Travel Time (s)	4.8			16.3			12.9			3.1			
Confl. Peds. (#/hr)	3		1	1		3			4	4			
Confl. Bikes (#/hr)						2							
Peak Hour Factor	0.92	0.92	0.92	0.92	0.94	0.94	0.79	0.79	0.79	0.59	0.92	0.59	
Heavy Vehicles (%)	1%	1%	2%	2%	2%	2%	0%	0%	0%	0%	2%	0%	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	870	0	0	983	0	0	30	0	0	46	0	
Turn Type		NA			NA		Split	NA		Split	NA		
Protected Phases		1			1		2	2		4	4		3
Permitted Phases													
Detector Phase		1			1		2	2		4	4		
Switch Phase													
Minimum Initial (s)	10.0			10.0			4.0	4.0		4.0	4.0		
Minimum Split (s)	15.0			15.0			9.0	9.0		9.0	9.0		18.0
Total Split (s)	58.0			58.0			20.0	20.0		20.0	20.0		18.0
Total Split (%)	50.0%			50.0%			17.2%	17.2%		17.2%	17.2%		16%
Yellow Time (s)	3.0			3.0			3.0	3.0		3.0	3.0		3.0
All-Red Time (s)	2.0			2.0			2.0	2.0		2.0	2.0		2.0
Lost Time Adjust (s)	0.0			0.0			0.0			0.0			
Total Lost Time (s)	5.0			5.0			5.0			5.0			
Lead/Lag	Lead			Lead			Lag	Lag		Lag	Lag		Lead
Lead-Lag Optimize?													
Recall Mode	Max			Max			None	None		None	None		
Act Effct Green (s)	61.1			61.1			5.6			5.6			
Actuated g/C Ratio	0.80			0.80			0.07			0.07			
v/c Ratio	0.58			0.66			0.13			0.20			
Control Delay	10.6			12.6			1.2			1.9			
Queue Delay	0.0			0.1			0.0			0.0			
Total Delay	10.6			12.7			1.2			1.9			
LOS	B			B			A			A			
Approach Delay	10.6			12.7			1.2			1.9			
Approach LOS	B			B			A			A			
Queue Length 50th (ft)	107			138			0			0			
Queue Length 95th (ft)	#656			#850			0			0			
Internal Link Dist (ft)	133			636			486			57			
Turn Bay Length (ft)													
Base Capacity (vph)	1501			1487			435			438			
Starvation Cap Reductn	0			50			0			0			
Spillback Cap Reductn	0			0			0			0			
Storage Cap Reductn	0			0			0			0			
Reduced v/c Ratio	0.58			0.68			0.07			0.11			
<b>Intersection Summary</b>													
Area Type:	Other												
Cycle Length:	116												
Actuated Cycle Length:	76.5												
Natural Cycle:	90												
Control Type:	Semi Act-Uncoord												
Maximum v/c Ratio:	0.66												
Intersection Signal Delay:	11.3						Intersection LOS: B						
Intersection Capacity Utilization	60.3%						ICU Level of Service B						
Analysis Period (min)	15												
# 95th percentile volume exceeds capacity, queue may be longer.													
Queue shown is maximum after two cycles.													
<b>Splits and Phases:</b> 1: Ash Street/Carriage Road & Commonwealth Avenue													

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Lane Configurations													
Volume (vph)	10	802	12	20	899	20	17	45	140	20	7	16	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Satd. Flow (prot)	0	1875	0	0	1854	0	0	1632	0	0	1745	0	
Flt Permitted		0.987			0.976			0.966			0.399		
Satd. Flow (perm)	0	1852	0	0	1812	0	0	1581	0	0	710	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		1			2			100			26		
Link Speed (mph)	30				30			30			30		
Link Distance (ft)	716				455			423			58		
Travel Time (s)	16.3				10.3			9.6			1.3		
Confl. Peds. (#/hr)		1	1				2		5	5		2	
Confl. Bikes (#/hr)					1								
Peak Hour Factor	0.94	0.94	0.94	0.95	0.95	0.95	0.85	0.85	0.85	0.61	0.61	0.61	
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	0%	0%	0%	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	877	0	0	988	0	0	238	0	0	70	0	
Turn Type	Perm	NA											
Protected Phases		1			1			3			3	2	
Permitted Phases	1			1			3			3			
Detector Phase	1	1		1	1		3	3		3	3		
Switch Phase													
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	15.0	
Minimum Split (s)	15.0	15.0		15.0	15.0		13.0	13.0		13.0	13.0	24.0	
Total Split (s)	55.0	55.0		55.0	55.0		15.0	15.0		15.0	15.0	21.0	
Total Split (%)	60.4%	60.4%		60.4%	60.4%		16.5%	16.5%		16.5%	16.5%	23%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0		
Total Lost Time (s)		5.0			5.0			5.0			5.0		
Lead/Lag	Lead	Lead		Lead	Lead							Lag	
Lead-Lag Optimize?													
Recall Mode	Min	Min		Min	Min		None	None		None	None	None	
Act Effct Green (s)	51.3			51.3			9.9			9.9			
Actuated g/C Ratio	0.69			0.69			0.13			0.13			
v/c Ratio	0.69			0.79			0.80			0.60			
Control Delay	13.1			16.9			41.0			46.6			
Queue Delay	0.1			0.0			0.0			0.0			
Total Delay	13.1			16.9			41.0			46.6			
LOS	B			B			D			D			
Approach Delay	13.1			16.9			41.0			46.6			
Approach LOS	B			B			D			D			
Queue Length 50th (ft)	162			211			57			18			
Queue Length 95th (ft)	#673			#831			#196			41			
Internal Link Dist (ft)	636			375			343			1			
Turn Bay Length (ft)													
Base Capacity (vph)	1270			1243			299			118			
Starvation Cap Reductn	17			0			0			0			
Spillback Cap Reductn	0			0			0			0			
Storage Cap Reductn	0			0			0			0			
Reduced v/c Ratio	0.70			0.79			0.80			0.59			

#### Intersection Summary

Area Type: Other

Cycle Length: 91

Actuated Cycle Length: 74.8

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 19.0      Intersection LOS: B

Intersection Capacity Utilization 81.2%      ICU Level of Service D

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Melrose Street & Commonwealth Avenue



Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	1	1	0	2	72	0	0	42	6
Conflicting Peds, #/hr	2	0	0	0	0	2	7	0	4	4	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	50	50	50	85	85	85	61	61	61
Heavy Vehicles, %	0	0	0	0	0	0	2	2	2	0	0	0
Mvmt Flow	0	0	0	2	2	0	2	85	0	0	69	10
Major/Minor				Minor1			Major1			Major2		
Conflicting Flow All				165	170	94	79	0	0	87	0	0
Stage 1				91	91	-	-	-	-	-	-	-
Stage 2				74	79	-	-	-	-	-	-	-
Critical Hdwy				6.4	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1				5.4	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.4	5.5	-	-	-	-	-	-	-
Follow-up Hdwy				3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver				830	727	968	1519	-	-	1522	-	-
Stage 1				938	823	-	-	-	-	-	-	-
Stage 2				954	833	-	-	-	-	-	-	-
Platoon blocked, %							-	-	-	-	-	-
Mov Cap-1 Maneuver				823	0	961	1510	-	-	1513	-	-
Mov Cap-2 Maneuver				823	0	-	-	-	-	-	-	-
Stage 1				936	0	-	-	-	-	-	-	-
Stage 2				948	0	-	-	-	-	-	-	-
Approach				WB			NB			SB		
HCM Control Delay, s				9.4			0.2			0		
HCM LOS				A								
Minor Lane/Major Mvmt												
Capacity (veh/h)	1510	-	-	823	1513	-	-	-	-	-	-	-
HCM Lane V/C Ratio	0.002	-	-	0.005	-	-	-	-	-	-	-	-
HCM Control Delay (s)	7.4	0	-	9.4	0	-	-	-	-	-	-	-
HCM Lane LOS	A	A	-	A	A	-	-	-	-	-	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	-	-	-	-	-	-	-

Intersection							
Int Delay, s/veh	3.8						
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Vol, veh/h	147	238		153	61	33	59
Conflicting Peds, #/hr	7	0		0	7	14	0
Sign Control	Free	Free		Free	Free	Stop	Stop
RT Channelized	-	None		-	None	-	None
Storage Length	-	-		-	-	0	-
Veh in Median Storage, #	-	0		0	-	0	-
Grade, %	-	0		0	-	0	-
Peak Hour Factor	87	87		88	88	82	82
Heavy Vehicles, %	1	1		2	2	0	0
Mvmt Flow	169	274		174	69	40	72
Major/Minor							
Major1		Major2		Minor2			
Conflicting Flow All	257	0	-	0	834	230	
Stage 1	-	-	-	-	223	-	
Stage 2	-	-	-	-	611	-	
Critical Hdwy	4.11	-	-	-	6.4	6.2	
Critical Hdwy Stg 1	-	-	-	-	5.4	-	
Critical Hdwy Stg 2	-	-	-	-	5.4	-	
Follow-up Hdwy	2.209	-	-	-	3.5	3.3	
Pot Cap-1 Maneuver	1314	-	-	-	341	814	
Stage 1	-	-	-	-	819	-	
Stage 2	-	-	-	-	546	-	
Platoon blocked, %	-	-	-	-	-	-	
Mov Cap-1 Maneuver	1306	-	-	-	282	800	
Mov Cap-2 Maneuver	-	-	-	-	282	-	
Stage 1	-	-	-	-	809	-	
Stage 2	-	-	-	-	457	-	
Approach							
EB			WB		SB		
HCM Control Delay, s	3.1		0		14.7		
HCM LOS					B		
Minor Lane/Major Mvmt							
EBL		EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	1306		-	-	482		
HCM Lane V/C Ratio	0.129		-	-	0.233		
HCM Control Delay (s)	8.2		0	-	14.7		
HCM Lane LOS	A		A	-	B		
HCM 95th %tile Q(veh)	0.4		-	-	0.9		

Intersection												
Int Delay, s/veh	22.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	70	0	196	4	4	3	114	353	0	0	318	79
Conflicting Peds, #/hr	5	0	0	0	0	5	24	0	4	4	0	24
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	46	46	46	91	91	91	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	1	1	1	1	1	1
Mvmt Flow	91	0	255	9	9	7	125	388	0	0	383	95
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1087	1079	460	1206	1126	417	483	0	0	393	0	0
Stage 1	436	436	-	643	643	-	-	-	-	-	-	-
Stage 2	651	643	-	563	483	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	195	220	605	162	207	640	1085	-	-	1171	-	-
Stage 1	603	583	-	465	472	-	-	-	-	-	-	-
Stage 2	461	472	-	514	556	-	-	-	-	-	-	-
Platoon blocked, %							-	-	-	-	-	-
Mov Cap-1 Maneuver	160	185	590	80	174	625	1063	-	-	1148	-	-
Mov Cap-2 Maneuver	160	185	-	80	174	-	-	-	-	-	-	-
Stage 1	510	581	-	394	400	-	-	-	-	-	-	-
Stage 2	372	400	-	286	554	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	83.4			35.7			2.2			0		
HCM LOS	F			E								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1063	-	-	346	141	1148	-	-				
HCM Lane V/C Ratio	0.118	-	-	0.998	0.17	-	-	-				
HCM Control Delay (s)	8.8	0	-	83.4	35.7	0	-	-				
HCM Lane LOS	A	A	-	F	E	A	-	-				
HCM 95th %tile Q(veh)	0.4	-	-	11.3	0.6	0	-	-				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Lane Configurations													
Volume (vph)	7	121	5	64	76	85	9	375	113	171	337	10	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Satd. Flow (prot)	0	1883	0	0	1726	0	0	1810	0	0	1845	0	
Flt Permitted		0.978			0.877			0.990			0.652		
Satd. Flow (perm)	0	1847	0	0	1533	0	0	1794	0	0	1221	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		3			38			24			2		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		425			307			148			306		
Travel Time (s)		9.7			7.0			3.4			7.0		
Confl. Peds. (#/hr)	3		3	3		3	7		4	4		7	
Confl. Bikes (#/hr)								1					
Peak Hour Factor	0.86	0.86	0.86	0.83	0.83	0.83	0.97	0.97	0.97	0.89	0.89	0.89	
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	155	0	0	271	0	0	512	0	0	582	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		3			3			1			1	2	
Permitted Phases	3			3			1			1		1	
Detector Phase	3	3		3	3		1	1		1	1		
Switch Phase													
Minimum Initial (s)	17.0	17.0	17.0	17.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	4.0	
Minimum Split (s)	22.3	22.3	22.3	22.3	35.2	35.2	35.2	35.2	35.2	35.2	35.2	17.0	
Total Split (s)	22.3	22.3	22.3	22.3	35.2	35.2	35.2	35.2	35.2	35.2	35.2	17.0	
Total Split (%)	29.9%	29.9%	29.9%	29.9%	47.2%	47.2%	47.2%	47.2%	47.2%	47.2%	47.2%	23%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	
All-Red Time (s)	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0		
Total Lost Time (s)		5.3			5.3			5.2			5.2		
Lead/Lag							Lead	Lead	Lead	Lead	Lead	Lag	
Lead-Lag Optimize?													
Recall Mode	Max	Max		Max	Max		Max	Max	Max	Max	Max	None	
Act Effct Green (s)	17.2			17.2			30.3			30.3			
Actuated g/C Ratio	0.28			0.28			0.50			0.50			
v/c Ratio	0.30			0.59			0.57			0.96			
Control Delay	20.3			24.2			14.6			46.6			
Queue Delay	0.0			0.0			0.0			0.0			
Total Delay	20.3			24.2			14.6			46.6			
LOS	C			C			B			D			
Approach Delay	20.3			24.2			14.6			46.6			
Approach LOS	C			C			B			D			
Queue Length 50th (ft)	40			66			101			166			
Queue Length 95th (ft)	105			#163			291			#514			
Internal Link Dist (ft)	345			227			68			226			
Turn Bay Length (ft)													
Base Capacity (vph)	523			460			905			609			
Starvation Cap Reductn	0			0			0			0			
Spillback Cap Reductn	0			0			0			0			
Storage Cap Reductn	0			0			0			0			
Reduced v/c Ratio	0.30			0.59			0.57			0.96			

**Intersection Summary**

Area Type: Other

Cycle Length: 74.5

Actuated Cycle Length: 60.9

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 29.1

Intersection LOS: C

Intersection Capacity Utilization 100.9%

ICU Level of Service G

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: Grove Street &amp; Central Street &amp; Auburn Street



Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	9	15	0	170	77	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	16	0	185	84	0
Major/Minor		Minor2	Major1		Major2	
Conflicting Flow All	269	84	84	0	-	0
Stage 1	84	-	-	-	-	-
Stage 2	185	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	720	975	1513	-	-	-
Stage 1	939	-	-	-	-	-
Stage 2	847	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	720	975	1513	-	-	-
Mov Cap-2 Maneuver	720	-	-	-	-	-
Stage 1	939	-	-	-	-	-
Stage 2	847	-	-	-	-	-
Approach		EB	NB		SB	
HCM Control Delay, s	9.3		0		0	
HCM LOS	A					
Minor Lane/Major Mvmt		NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1513	-	861	-	-	-
HCM Lane V/C Ratio	-	-	0.03	-	-	-
HCM Control Delay (s)	0	-	9.3	-	-	-
HCM Lane LOS	A	-	A	-	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-	-

Intersection						
Int Delay, s/veh	1.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	5	19	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	5	21	0	0	0
Major/Minor		Minor1	Major1			
Conflicting Flow All	21	21	0	0		
Stage 1	21	-	-	-		
Stage 2	0	-	-	-		
Critical Hdwy	7.12	6.22	-	-		
Critical Hdwy Stg 1	6.12	-	-	-		
Critical Hdwy Stg 2	-	-	-	-		
Follow-up Hdwy	3.518	3.318	-	-		
Pot Cap-1 Maneuver	992	1056	-	-		
Stage 1	998	-	-	-		
Stage 2	-	-	-	-		
Platoon blocked, %	-	-	-	-		
Mov Cap-1 Maneuver	992	1056	-	-		
Mov Cap-2 Maneuver	992	-	-	-		
Stage 1	998	-	-	-		
Stage 2	-	-	-	-		
Approach		WB	NB			
HCM Control Delay, s	8.4		0			
HCM LOS	A					
Minor Lane/Major Mvmt		NBT	NBR	WBLn1		
Capacity (veh/h)	-	-	1056			
HCM Lane V/C Ratio	-	-	0.005			
HCM Control Delay (s)	-	-	8.4			
HCM Lane LOS	-	-	A			
HCM 95th %tile Q(veh)	-	-	0			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø3
Lane Configurations													
Volume (vph)	0	620	0	0	806	0	27	0	12	10	0	2	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Satd. Flow (prot)	0	1863	0	0	1863	0	0	1674	0	0	1786	0	
Flt Permitted								0.967			0.959		
Satd. Flow (perm)	0	1863	0	0	1863	0	0	1674	0	0	1764	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)								113			113		
Link Speed (mph)	30			30			30			30			
Link Distance (ft)	213			716			566			137			
Travel Time (s)	4.8			16.3			12.9			3.1			
Confl. Peds. (#/hr)	3		1	1		3			4	4			
Confl. Bikes (#/hr)					2								
Peak Hour Factor	0.85	0.85	0.92	0.92	0.95	0.95	0.55	0.55	0.55	0.60	0.92	0.60	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	4%	4%	0%	2%	0%	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	729	0	0	848	0	0	71	0	0	20	0	
Turn Type		NA			NA		Split	NA		Split	NA		
Protected Phases	1			1			2	2		4	4		3
Permitted Phases													
Detector Phase		1			1		2	2		4	4		
Switch Phase													
Minimum Initial (s)	10.0			10.0			4.0	4.0		4.0	4.0		
Minimum Split (s)	15.0			15.0			9.0	9.0		9.0	9.0		18.0
Total Split (s)	58.0			58.0			20.0	20.0		20.0	20.0		18.0
Total Split (%)	50.0%			50.0%			17.2%	17.2%		17.2%	17.2%		16%
Yellow Time (s)	3.0			3.0			3.0	3.0		3.0	3.0		3.0
All-Red Time (s)	2.0			2.0			2.0	2.0		2.0	2.0		2.0
Lost Time Adjust (s)	0.0			0.0			0.0			0.0			
Total Lost Time (s)	5.0			5.0			5.0			5.0			
Lead/Lag	Lead			Lead			Lag	Lag		Lag	Lag		Lead
Lead-Lag Optimize?													
Recall Mode	Max			Max			None	None		None	None		
Act Effct Green (s)	57.3			57.3			5.7			5.5			
Actuated g/C Ratio	0.78			0.78			0.08			0.07			
v/c Ratio	0.50			0.59			0.30			0.08			
Control Delay	6.5			7.7			6.4			0.7			
Queue Delay	0.0			0.1			0.0			0.0			
Total Delay	6.5			7.8			6.4			0.7			
LOS	A			A			A			A			
Approach Delay	6.5			7.8			6.4			0.7			
Approach LOS	A			A			A			A			
Queue Length 50th (ft)	79			103			0			0			
Queue Length 95th (ft)	237			351			0			0			
Internal Link Dist (ft)	133			636			486			57			
Turn Bay Length (ft)													
Base Capacity (vph)	1446			1446			431			454			
Starvation Cap Reductn	0			61			0			0			
Spillback Cap Reductn	0			0			0			0			
Storage Cap Reductn	0			0			0			0			
Reduced v/c Ratio	0.50			0.61			0.16			0.04			

**Intersection Summary**

Area Type: Other

Cycle Length: 116

Actuated Cycle Length: 73.8

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 7.1

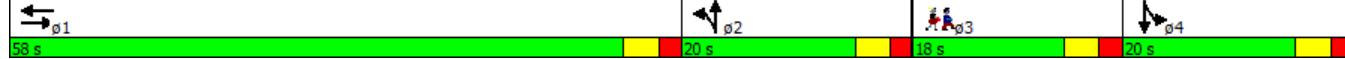
Intersection LOS: A

Intersection Capacity Utilization 54.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Ash Street/Carriage Road &amp; Commonwealth Avenue



	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Lane Group													
Lane Configurations		↔			↔			↔			↔		
Volume (vph)	19	620	10	54	779	15	22	18	106	21	11	24	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Satd. Flow (prot)	0	1857	0	0	1853	0	0	1601	0	0	1638	0	
Flt Permitted		0.965			0.921			0.948			0.639		
Satd. Flow (perm)	0	1793	0	0	1712	0	0	1527	0	0	1063	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		1			2			118			28		
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		716			455			423			58		
Travel Time (s)		16.3			10.3			9.6			1.3		
Confl. Peds. (#/hr)		1	1				2		5	5		2	
Confl. Bikes (#/hr)					1								
Peak Hour Factor	0.88	0.88	0.88	0.93	0.93	0.93	0.87	0.87	0.87	0.85	0.85	0.85	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	6%	6%	6%	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	738	0	0	912	0	0	168	0	0	66	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		1			1			3			3	2	
Permitted Phases	1			1			3			3			
Detector Phase	1	1		1	1		3	3		3	3		
Switch Phase													
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	15.0	
Minimum Split (s)	15.0	15.0		15.0	15.0		13.0	13.0		13.0	13.0	24.0	
Total Split (s)	55.0	55.0		55.0	55.0		15.0	15.0		15.0	15.0	21.0	
Total Split (%)	60.4%	60.4%		60.4%	60.4%		16.5%	16.5%		16.5%	16.5%	23%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0		
Total Lost Time (s)		5.0			5.0			5.0			5.0		
Lead/Lag	Lead	Lead		Lead	Lead							Lag	
Lead-Lag Optimize?													
Recall Mode	Min	Min		Min	Min		None	None		None	None	None	
Act Effct Green (s)	51.9			51.9			8.8			8.8			
Actuated g/C Ratio	0.70			0.70			0.12			0.12			
v/c Ratio	0.59			0.76			0.59			0.44			
Control Delay	10.3			15.6			21.2			31.2			
Queue Delay	0.0			0.0			0.0			0.0			
Total Delay	10.3			15.6			21.2			31.2			
LOS	B			B			C			C			
Approach Delay	10.3			15.6			21.2			31.2			
Approach LOS	B			B			C			C			
Queue Length 50th (ft)	105			162			19			15			
Queue Length 95th (ft)	437			#767			85			58			
Internal Link Dist (ft)	636			375			343			1			
Turn Bay Length (ft)													
Base Capacity (vph)	1253			1197			309			169			
Starvation Cap Reductn	0			0			0			0			
Spillback Cap Reductn	0			0			0			0			
Storage Cap Reductn	0			0			0			0			
Reduced v/c Ratio	0.59			0.76			0.54			0.39			
<b>Intersection Summary</b>													
Area Type:	Other												
Cycle Length: 91													
Actuated Cycle Length: 74.3													
Natural Cycle: 90													
Control Type: Actuated-Uncoordinated													
Maximum v/c Ratio: 0.76													
Intersection Signal Delay: 14.6							Intersection LOS: B						
Intersection Capacity Utilization 84.4%							ICU Level of Service E						
Analysis Period (min) 15													
# 95th percentile volume exceeds capacity, queue may be longer.													
Queue shown is maximum after two cycles.													
Splits and Phases: 2: Melrose Street & Commonwealth Avenue													
													

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	1	3	7	5	46	0	0	55	2
Conflicting Peds, #/hr	2	0	0	0	0	2	7	0	4	4	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	69	69	69	87	87	87	85	85	85
Heavy Vehicles, %	0	0	0	0	0	0	3	3	3	6	6	6
Mvmt Flow	0	0	0	1	4	10	6	53	0	0	65	2
Major/Minor				Minor1			Major1			Major2		
Conflicting Flow All				132	133	62	67	0	0	55	0	0
Stage 1				66	66	-	-	-	-	-	-	-
Stage 2				66	67	-	-	-	-	-	-	-
Critical Hdwy				6.4	6.5	6.2	4.13	-	-	4.16	-	-
Critical Hdwy Stg 1				5.4	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.4	5.5	-	-	-	-	-	-	-
Follow-up Hdwy				3.5	4	3.3	2.227	-	-	2.254	-	-
Pot Cap-1 Maneuver				867	761	1009	1528	-	-	1525	-	-
Stage 1				962	844	-	-	-	-	-	-	-
Stage 2				962	843	-	-	-	-	-	-	-
Platoon blocked, %							-	-	-	-	-	-
Mov Cap-1 Maneuver				857	0	1001	1519	-	-	1516	-	-
Mov Cap-2 Maneuver				857	0	-	-	-	-	-	-	-
Stage 1				957	0	-	-	-	-	-	-	-
Stage 2				956	0	-	-	-	-	-	-	-
Approach				WB			NB			SB		
HCM Control Delay, s					8.7			0.7			0	
HCM LOS					A							
Minor Lane/Major Mvmt												
Capacity (veh/h)	1519	-	-	980	1516	-	-	-	-	-	-	-
HCM Lane V/C Ratio	0.004	-	-	0.016	-	-	-	-	-	-	-	-
HCM Control Delay (s)	7.4	0	-	8.7	0	-	-	-	-	-	-	-
HCM Lane LOS	A	A	-	A	A	-	-	-	-	-	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	-	-	-	-	-	-	-

Intersection								
Int Delay, s/veh	4.7							
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Vol, veh/h	53	82		126	85	45	89	
Conflicting Peds, #/hr	7	0		0	7	14	0	
Sign Control	Free	Free	Free	Free	Stop	Stop		
RT Channelized	-	None	-	None	-	None		
Storage Length	-	-	-	-	0	-		
Veh in Median Storage, #	-	0		0	-	0	-	
Grade, %	-	0		0	-	0	-	
Peak Hour Factor	80	80		77	77	70	70	
Heavy Vehicles, %	2	2		1	1	5	5	
Mvmt Flow	66	102		164	110	64	127	
Major/Minor								
Major1		Major2		Minor2				
Conflicting Flow All	288	0	-	0	468	240		
Stage 1	-	-	-	-	233	-		
Stage 2	-	-	-	-	235	-		
Critical Hdwy	4.12	-	-	-	6.45	6.25		
Critical Hdwy Stg 1	-	-	-	-	5.45	-		
Critical Hdwy Stg 2	-	-	-	-	5.45	-		
Follow-up Hdwy	2.218	-	-	-	3.545	3.345		
Pot Cap-1 Maneuver	1274	-	-	-	548	792		
Stage 1	-	-	-	-	799	-		
Stage 2	-	-	-	-	797	-		
Platoon blocked, %	-	-	-	-	-	-		
Mov Cap-1 Maneuver	1267	-	-	-	506	778		
Mov Cap-2 Maneuver	-	-	-	-	506	-		
Stage 1	-	-	-	-	790	-		
Stage 2	-	-	-	-	744	-		
Approach								
EB			WB		SB			
HCM Control Delay, s	3.1		0		12.7	B		
HCM LOS								
Minor Lane/Major Mvmt								
Capacity (veh/h)	EBL	EBT	WBT	WBR	SBLn1			
0.052	-	-	-	-	0.29			
HCM Control Delay (s)	8	0	-	-	12.7			
HCM Lane LOS	A	A	-	-	B			
HCM 95th %tile Q(veh)	0.2	-	-	-	1.2			

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	52	1	80	2	2	8	95	249	1	2	181	94
Conflicting Peds, #/hr	5	0	0	0	0	5	24	0	4	4	0	24
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	50	50	50	90	90	90	89	89	89
Heavy Vehicles, %	1	1	1	0	0	0	1	1	1	2	2	2
Mvmt Flow	72	1	111	4	4	16	106	277	1	2	203	106
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	769	760	285	815	811	306	314	0	0	283	0	0
Stage 1	266	266	-	493	493	-	-	-	-	-	-	-
Stage 2	503	494	-	322	318	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.1	6.5	6.2	4.11	-	-	4.12	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.5	4	3.3	2.209	-	-	2.218	-	-
Pot Cap-1 Maneuver	319	337	756	298	316	739	1252	-	-	1279	-	-
Stage 1	742	691	-	562	550	-	-	-	-	-	-	-
Stage 2	553	548	-	694	657	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	277	300	738	227	281	721	1227	-	-	1253	-	-
Mov Cap-2 Maneuver	277	300	-	227	281	-	-	-	-	-	-	-
Stage 1	664	687	-	503	492	-	-	-	-	-	-	-
Stage 2	472	490	-	575	653	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	18.8			13.6				2.3			0.1	
HCM LOS	C			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1		SBL	SBT	SBR			
Capacity (veh/h)	1227	-	-	444	444	1253	-	-	-			
HCM Lane V/C Ratio	0.086	-	-	0.416	0.054	0.002	-	-	-			
HCM Control Delay (s)	8.2	0	-	18.8	13.6	7.9	0	-	-			
HCM Lane LOS	A	A	-	C	B	A	A	A	-			
HCM 95th %tile Q(veh)	0.3	-	-	2	0.2	0	-	-	-			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Lane Configurations													
Volume (vph)	18	23	0	42	42	79	3	248	22	69	176	19	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Satd. Flow (prot)	0	1804	0	0	1731	0	0	1857	0	0	1816	0	
Flt Permitted		0.841			0.911			0.998			0.842		
Satd. Flow (perm)	0	1548	0	0	1595	0	0	1853	0	0	1548	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)						59			7			6	
Link Speed (mph)		30				30			30			30	
Link Distance (ft)		425				307			148			306	
Travel Time (s)		9.7				7.0			3.4			7.0	
Confl. Peds. (#/hr)	3		3	3		3	7		4	4		7	
Confl. Bikes (#/hr)									1				
Peak Hour Factor	0.81	0.81	0.81	0.84	0.84	0.84	0.86	0.86	0.86	0.87	0.87	0.87	
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	1%	1%	1%	2%	2%	2%	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	50	0	0	194	0	0	317	0	0	303	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		3			3			1			1	2	
Permitted Phases	3			3			1			1		1	
Detector Phase	3	3		3	3		1	1		1	1		
Switch Phase													
Minimum Initial (s)	17.0	17.0	17.0	17.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	4.0	
Minimum Split (s)	22.3	22.3	22.3	22.3	35.2	35.2	35.2	35.2	35.2	35.2	35.2	17.0	
Total Split (s)	22.3	22.3	22.3	22.3	35.2	35.2	35.2	35.2	35.2	35.2	35.2	17.0	
Total Split (%)	29.9%	29.9%	29.9%	29.9%	47.2%	47.2%	47.2%	47.2%	47.2%	47.2%	47.2%	23%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	
All-Red Time (s)	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	0.0	
Lost Time Adjust (s)		0.0			0.0		0.0		0.0		0.0		
Total Lost Time (s)		5.3			5.3				5.2			5.2	
Lead/Lag							Lead	Lead	Lead	Lead	Lead	Lag	
Lead-Lag Optimize?													
Recall Mode	Max	Max		Max	Max		Max	Max	Max	Max	Max	None	
Act Effct Green (s)	17.2			17.2			30.3			30.3			
Actuated g/C Ratio	0.28			0.28			0.50			0.50			
v/c Ratio	0.11			0.39			0.34			0.39			
Control Delay	19.3			16.3			11.7			12.7			
Queue Delay	0.0			0.0			0.0			0.0			
Total Delay	19.3			16.3			11.7			12.7			
LOS	B			B			B			B			
Approach Delay	19.3			16.3			11.7			12.7			
Approach LOS	B			B			B			B			
Queue Length 50th (ft)	12			35			56			55			
Queue Length 95th (ft)	41			102			155			160			
Internal Link Dist (ft)	345			227			68			226			
Turn Bay Length (ft)													
Base Capacity (vph)	436			492			926			773			
Starvation Cap Reductn	0			0			0			0			
Spillback Cap Reductn	0			0			0			0			
Storage Cap Reductn	0			0			0			0			
Reduced v/c Ratio	0.11			0.39			0.34			0.39			

**Intersection Summary**

Area Type: Other

Cycle Length: 74.5

Actuated Cycle Length: 60.9

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.39

Intersection Signal Delay: 13.5

Intersection LOS: B

Intersection Capacity Utilization 77.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: Grove Street &amp; Central Street &amp; Auburn Street



Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	22	31	0	81	103	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	34	0	88	112	0
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	200	112	112	0	-	0
Stage 1	112	-	-	-	-	-
Stage 2	88	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	789	941	1478	-	-	-
Stage 1	913	-	-	-	-	-
Stage 2	935	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	789	941	1478	-	-	-
Mov Cap-2 Maneuver	789	-	-	-	-	-
Stage 1	913	-	-	-	-	-
Stage 2	935	-	-	-	-	-
Approach	EB		NB		SB	
HCM Control Delay, s	9.4		0		0	
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1478	-	871	-	-	
HCM Lane V/C Ratio	-	-	0.066	-	-	
HCM Control Delay (s)	0	-	9.4	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.2	-	-	

Intersection						
Int Delay, s/veh	4.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	15	15	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	16	16	0	0	0
Major/Minor		Minor1	Major1			
Conflicting Flow All	16	16	0	0		
Stage 1	16	-	-	-		
Stage 2	0	-	-	-		
Critical Hdwy	7.12	6.22	-	-		
Critical Hdwy Stg 1	6.12	-	-	-		
Critical Hdwy Stg 2	-	-	-	-		
Follow-up Hdwy	3.518	3.318	-	-		
Pot Cap-1 Maneuver	999	1063	-	-		
Stage 1	1004	-	-	-		
Stage 2	-	-	-	-		
Platoon blocked, %	-	-	-	-		
Mov Cap-1 Maneuver	999	1063	-	-		
Mov Cap-2 Maneuver	999	-	-	-		
Stage 1	1004	-	-	-		
Stage 2	-	-	-	-		
Approach		WB	NB			
HCM Control Delay, s	8.4		0			
HCM LOS	A					
Minor Lane/Major Mvmt		NBT	NBR	WBLn1		
Capacity (veh/h)	-	-	1063			
HCM Lane V/C Ratio	-	-	0.015			
HCM Control Delay (s)	-	-	8.4			
HCM Lane LOS	-	-	A			
HCM 95th %tile Q(veh)	-	-	0			